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ABSTRACT

Space layout and work flow patterns in the Audiovisual Center at Purdue University were studied with respect to effective space utilization and the need for planning space requirements in relationship to the activities being performed. Space and work areas were reorganized to facilitate the flow of work and materials between areas, and equipment and material storage was reorganized to expedite retrieval and restocking. Ten diagrams show equipment circulation forms, paper flow, and plans of the rooms involved in the proposed change. Current plans, present and planned space requirements, and guide for the reorganization of equipment and media are appended. (Author/DS)

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AUDIO-VISUAL SPACE REORGANIZATION STUDY

by

Martha Baker

RDU 75-05

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INTRODUCTION

The purpose of this project was to develop a new space plan for rooms 31, 35, and 65 of the Audio-Visual Center (AVC) on the ground floor of Stewart Center. Rooms 35 and 65 are used to store the audio-visual media and equipment loaned to the Purdue community in support of instructional programs on the West Lafayette campus, Purdue regional campuses, and other institutions. In addition to storage, these two rooms house inspection and repair areas and a customer pickup/preview counter. Room 31 is currently used by the Reproduction Services operation. The current floor plan of the ground floor of Stewart Center and recent layout sketches of rooms 35 and 65 are found in Appendix A.

The opportunity for the proposed reorganization came about as a result of four previously planned space changes within the AVC, namely the relocations of: 1) the Scheduling Office from room 66 to room 61, 2) Reproduction Services from room 31 to room 66, 3) the Archive Films from room 66A to the media storage area in room 35, and 4) the Master Audio Tapes from room 53 to the media storage area in room 35 (room 53 is to become a conference room). As a result of these changes, it was proposed that the equipment and media storage or service areas be expanded into room 31. This expansion could result in substantial changes in the locations of activities; therefore, a study of current work flows and space requirements was desired to set a framework for the reorganization of these rooms. Because assistance from the School of Industrial

Engineering was unavailable, the Libraries/Audio-Visual Center's Research Development Unit (RDU) offered assistance in conducting this project.

Objectives and Assumptions

The objectives of the space reorganization are:

1. to reorganize the work areas to facilitate and expedite the flows of paper, materials, and equipment between integral areas to accommodate a larger flow of work without an increase in staff.
2. to reorganize equipment and material storage to enable the staff to more easily and quickly store and retrieve equipment and materials.

Following are the assumptions on which the space reorganization proposals have been developed:

1. no new personnel are to be added,
2. budget for new shelving is estimated at $2000 for the next 5 years,
3. funds for physical remodeling of facilities are unavailable, and
4. previously planned relocations are to be carried out.

As part of this project, the RDU staff provided alternative space plans and information about subsequent space utilization. After gathering essential data and identifying the alternative locations of the pickup/preview counter (upon which most other areas are directly or indirectly dependent), the RDU staff presented seven floor plans of rooms 31, 35, 61, 63, and 65 to the AVC Ad Hoc Advisory Group. The Advisory Group was composed of W. Blom; D. Fry; R. Kovac; C. Snow; and C. Stafford. W. Blom was absent but had provided valuable input at an earlier time. The Advisory Group selected two plans for further development and rejected five for reasons of cost, traffic, and security. The Advisory Group

requested that one of the two acceptable plans be further modified to allow an additional minor variation, consequently, three plans are presented in this final report.

SUMMARY

Conclusions

A. Activities and Functions

1. The pickup/preview counter should be located at a double door entrance on a public corridor to facilitate the movement of people and carts used for the transport of equipment and packages.
2. Forms (between integral units) are moving as efficiently as possible given the location of the scheduling office and processing areas (equipment inspection, pickup/preview counter, projection services, and shipping bench).
3. The location of processing areas related directly to customer service (see Appendix A, Figure A-2) should be centralized around the shipper's desk.

B. Communication

1. The frequency of communication between staff and customers of the scheduling office and the processing areas requires that these areas be located as close together as possible.

C. Space Utilization

1. Closer coordination of staff functions will insure that pieces of equipment in use are listed in the master equipment records, and vice versa. Accurate records will help in the preparation of shelving guides and in the assessment of shelving needs in the future.

2. It is not possible to expand storage areas within the present floor space without overcrowding.

3. In order to store media and equipment which are expected to be acquired over the next five years, it will be necessary to acquire additional storage units (see Appendix B, Table B.1.1-B.1.2).

4. Standard size storage units should be acquired for all expansion in the storage areas.

D. Related Factors

1. Aisles between shelving sections can vary in width according to use and type of storage.

Recommendations for Future Planning

1. Consideration should be given to increasing the width of the door between room 65 and corridor J to allow the relocation of the pickup/preview counter along the same corridor as the scheduling office (room 61).

2. Further consideration should be given to building a single customer service counter for scheduling and pickup/preview.

3. Use of the intercom system between the shipper's desk and scheduling office should be studied after the new door is constructed between rooms 61 (scheduling) and 35 (media storage).

4. Procedures associated with written equipment records should be reviewed and coordinated to insure that these records are accurate and kept up-to-date.

METHODOLOGY

The primary steps involved in this study for the reorganization of space and materials were: 1) identification of project objectives and assumptions; 2) identification of integral units located in the space under study and other units dealing with them; 3) identification, observation, and documentation of the activities, responsibilities, and needs of the people working in these integral units; 4) measurement of space and analysis of its current utilization; 5) acquisition of information about related factors (e.g., security problems, future expansion needs, OSHA requirements); 6) analysis of findings; and 7) documentation of plans and recommendations.

Initial Steps

The first two steps of this process were carried out in consultation with the Head of Distribution Services in the AVC who originally requested the undertaking of the project and who has responsiblity for several of the integral units in rooms 35 and 65. A work plan was outlined in detail and discussed and revised in consultation with the AVC Ad Hoc Advisory Group.

Activities and Functions

The analysis of the current space layout in rooms 31, 35, and 65 began with the observation and documentation of the work activities of the staff and the patterns of movement of personnel, media, equipment, and

paper forms. Staff responsibilities and needs were identified. Patterns and frequency of face-to-face or intercom communication between staff members were studied. This information was gathered by interviews with supervisors and staff members working in each of the activity areas that are related to the operations carried on in rooms 35 and 65, namely customer pickup/preview service, equipment inspection, media inspection, projection service, scheduling, and shipping.

As a result of these interviews and observations, integral units were identified and defined. An integral unit is comprised of one or more activities (for example, inspection and repair; media storage; and receiving and shipping) which are logically closely related.

Floor Space, Shelf Space, and Current Utilization

Measurements of the floor space in each room were obtained from a scaled drawing of rooms 31, 35, 61, 63, and 65. Inspection of rooms 35 and 65 was undertaken for the purpose of comparing the current layout with recent sketches showing location of shelving units, cabinets, desks, etc., and changes were made to the sketches as needed. Each item in those two rooms, existing aisles, and free spaces were then measured.

After observing inconsistencies between the number of pieces of equipment shelved in room 63 and records in the scheduling office, a thorough inventory was done by comparing the equipment and the slot labels on the shelving units with the computer-generated master list of equipment (dated 6/2/75), which, in theory, is a complete file showing every piece of audio-visual equipment owned by the Libraries/Audio-Visual Center. After resolving the discrepancies, it was possible to begin determining the total number of shelf feet that would be used if every

piece of equipment that belongs in room 65 were on the shelf. Dimensions of each type of equipment were obtained from the master list, if recorded there, or from the pieces themselves. Notes were made concerning especially heavy or awkward pieces, so that they could be reshelved in convenient locations. After collecting these data, the records of each piece of equipment were separated into the four equipment pools (EL, EP, ET, EA) and arranged in numerical sequence on paper, in order to determine the feasibility of a numerical shelving arrangement.

A survey was made of the shelving areas in room 35 to ascertain the amount and location of unused shelf space. Measurements were made of the shelving units for the archive films currently stored in room 66A; the master audio tape collection currently in room 53 (storage); and additional shelving units intended for master audio tapes now in room 68 (tape counter and listening room).

Related Factors

Five year projected estimates of the number of pieces to be added to the equipment and media collections (other than those due to replacement) were obtained from the Head of Distribution Services and the Media Librarian. This provided the basis for estimating additional storage units needed for expansion.

Aisle and door space widths needed for a free flow of traffic were established by measuring existing space, observing traffic patterns and interviewing staff who work in rooms 31, 35, and 65.

The Purdue University Physical Plant, Department of Planning and Engineering was contacted concerning OSHA regulations. It was learned that there are no regulations governing storage work areas of this type.

Security problems were discussed during interviews with supervisors and staff members responsible for media and equipment storage.

New Floor Plans and Conclusions

After taking into account the findings from all of these steps and the initial assumptions, of the study, conclusions were drawn, and floor plans for rooms 31, 35, 63, and 65 were sketched in rough form. The advantages and disadvantages of each were outlined and charts made to show the nature of the changes and relocations.

These rough plans and charts were presented to the AVC Ad Hoc Advisory Group, who selected several plans that were acceptable. Final drafting work was completed for the three acceptable plans.

FINDINGS

Activities and Functions

There are ten integral units located in rooms 35, 61, and 65. They are the following:

1. EL/ET equipment storage (including 4 preview projectors always on carts) (Room 65)
2. EP/EA equipment storage (including carts) and projection service work area (Room 65)
3. Equipment inspection and repair (Room 65)
4. Master tape storage (Room 53)
5. Media inspection (Room 35)
6. Media storage (archive films) (Rooms 65 and 66A)
7. New door (between rooms 61 and 35; or rooms 63 and 35, or rooms 63 and 65)
8. Oversize video equipment (Rooms 35 and 65)
9. Pickup/Preview counter (Room 65)
10. Shipping area (Room 35)

By interviewing the staff and observing the daily activities in these units, it was found that certain integral units logically need to be located near each other so that communication and movement of material and equipment can be carried out expeditiously. The juxtaposition of the shipping and pickup/preview counters, for example, is important because the activities of the two shipping clerks are divided between these areas

each day; and the customer pickup/preview service counter requires continual staffing. These are the integral units with require proximity:

Shipping area	to	Pickup/preview counter
Pickup/preview counter	to	Equipment & media storage areas
Shipping area	to	Media storage area
Shipping & pickup/preview counter	to	Scheduling office
Equipment inspection/repair area	to	Equipment storage areas
Media inspection area	to	Media storage area
Projection service area	to	Video and EP/EA equipment storage
Master audio tapes storage area	to	Tape duplication room

Communication Between Units

There are two kinds of communication between units: written and verbal. The former was observed and mapped on a floor plan (see Figure 1) and occurs in the following manner. Every day three types of forms travel between the integral units:

1) An equipment control card (see Figure 2) is sent with each order form from the scheduling office to the shippers desk for each piece of equipment scheduled for use. The card is temporarily filed in the equipment inspection area until the piece is returned, inspected and reshelved, at which time the card is returned to the scheduling office.

2) An order for projection service is filled out on a six-part form in the scheduling office (see Figure 3). Part 2 is either given to the customer or discarded. Parts 4, 5, and 6 of the form are placed in the mailboxes of the projectionist assigned to the order. These three parts are returned to the shipper's desk when the projectionist has completed service. After sorting and checking them, the shipper discards the forms.

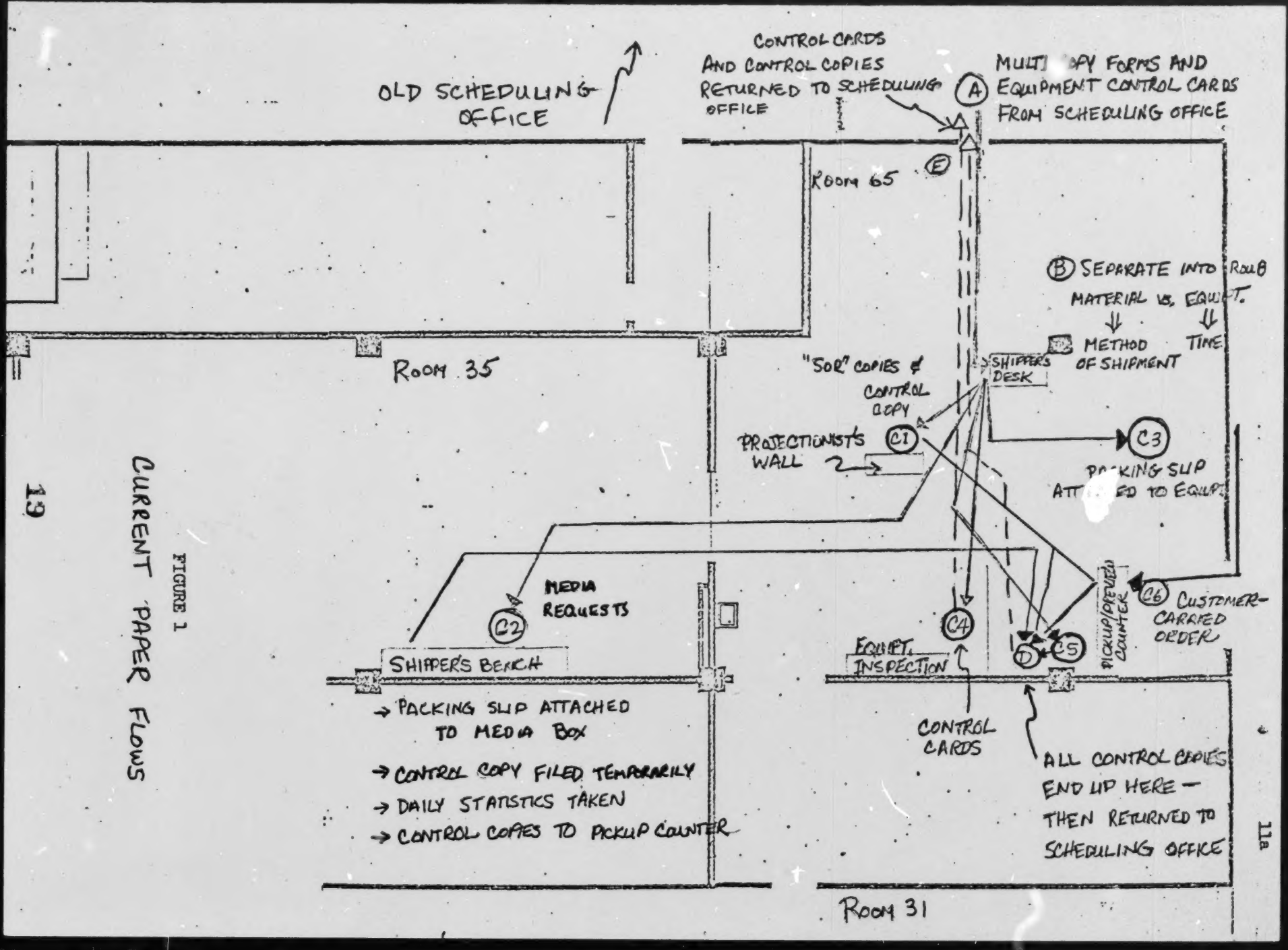


FIGURE 1

CURRENT PAPER FLOWS

TABLE 1

KEY TO PAPER FLOWS DIAGRAMS

A. Multiple-form prepared in scheduling office for

- Projection service
- Pickup-loan equipment and media
- Preview media
- Off-campus shipment

B. Delivered daily and more often to shipper's desk

C. Sorted by type of service

- Media and/not equipment sorted by method of shipment
- Equipment only sorted by time priority

C1. Projectionists control copy posted on board for pickup; projectionists have "SOR" copies

C2. Shipping bench for media packaging and/not shipment

C3. Packing slip attached to equipment by shipper for all equipment orders

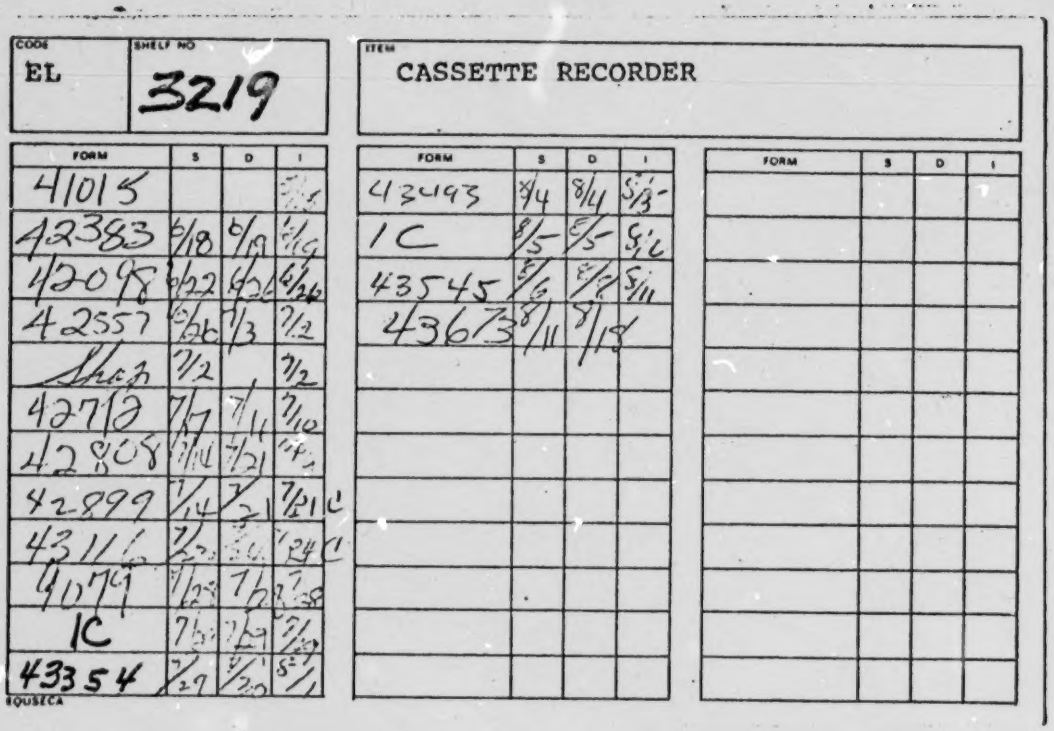
C4. Equipment control cards filed in box at inspection desk

C5. Pickup/preview counter for customer arrival

C6. On short notice, hand carried by customer to pickup/preview desk

D. After processing, all control copies returned to files by pickup/preview counter

E. Pickup by scheduling office daily for permanent filing. Equipment control cards returned to scheduling office when equipment returned.



CODE	SHELF NO
EL	3219

ITEM: CASSETTE RECORDER

FORM	S	D	I
41015			
42383	6/8	6/9	6/16
42098	6/22	6/26	6/26
42557	6/26	7/3	7/2
Shop	7/2		7/2
42713	7/7	7/14	7/10
42808	7/14	7/21	7/21
42899	7/14	7/21	7/21 C
43116	7/22	7/24	7/24 C
41044	7/28	7/28	7/28
IC	7/28	7/29	7/29
43354	7/29	8/20	8/1

EQUSECA

FORM	S	D	I
43493	8/4	8/4	8/13
IC	8/5	8/5	8/12
43545	8/6	8/12	8/11
43673	8/11	8/18	

FORM	S	D	I

FIGURE 2

EQUIPMENT CONTROL CARD

FROM: PURDUE UNIVERSITY
AUDIO VISUAL CENTER
WEST LAFAYETTE, INDIANA 47907

TO:

CONTENTS-SAFETY FILM
PARCEL MAY BE OPENED FOR
POSTAL INSPECTION.

RETURN POSTAGE GUARANTEED
IF UNDELIVERABLE

PHONE (317) 749-2833

PICKED UP BY

LIBRARY
MATERIAL

SHIP DATE	TIME	CLERK	DUE DATE	TIME
				POSTAGE

USER CODE	ORDER NO.	SHIP VIA	BLDG ROOM

CODE	SHELF NO.	DESCRIPTION	FEE

FIGURE 3

DO NOT REMOVE

DO NOT REWIND FILMS

A-V FORM IC-6

RETURN IMMEDIATELY AFTER SHOWING 09498

PACKING SLIP

2 CONFIRMATION COPY
3 CONTROL COPY
4 SET UP ORDER
5 REMOVAL ORDER 22
6 OPERATE ORDER

SAMPLE MULTIPLE-FORMS FOR PROJECTION SERVICE

The first and third parts of this form are delivered from the scheduling office to the shipper's desk where they are treated like the forms described next.

3) An order for customer pickup/preview or off-campus mailing is written on a three part form (see Figure 4) identical to the first 3 parts of the six-part form. The order form parts 1 and 3 are sorted by the shipper according to the type of processing required and the time deadlines. Any type of order requesting media is first sent to the shipping bench for processing. The orders requiring equipment are processed by the shippers and occassionally by a projectionist and/or equipment inspector. This processing involves locating one piece of equipment and taping the first part of the order form on it. The remaining third part of the order form, called the control copy is placed either on a magnetic board for the projectionists or in a file at the pickup/preview counter until the order is filled. After service is completed, control copies for all types of orders are placed in a temporary file at the pickup/preview counter until they are returned in daily batches to the scheduling office for the permanent files.

Verbal communication, both face-to-face and intercom, between the units occurs when a problem arises in the processing of an order form at shipping, projection service, or the pickup/preview counter; or when scheduling needs to check the availability of media or equipment.

Major difficulties were observed in the flow of communication between the units located in rooms 35 and 65 and the scheduling office, now located in room 61 and, until recently in room 66. The bases of the problem are the distance between the areas; the frequency of problem orders or the need for information, and the necessity of using the locked door on

NOT FOR PROJECTION SERVICE

8-2-out Ⓑ Uarco Business Forms - C

FROM: PURDUE UNIVERSITY
AUDIO VISUAL CENTER
WEST LAFAYETTE, INDIANA 47907

TO:

CONTENTS-SAFETY FILM
PARCEL MAY BE OPENED FOR
POSTAL INSPECTION.

RETURN POSTAGE GUARANTEED
IF UNDELIVERABLE.

OMISSIONS,
PHONE (317) 749-2833

LIBRARY MATERIAL

SHIP DATE	TIME	CLERK	DUE DATE	TIME
				POSTAGE

USER CODE	ORDER NO.	SHIP VIA	BLDG ROOM

CODE	SHELF NO.	DESCRIPTION	FEE

PICKED UP BY

FIGURE 4

DO NOT REMOVE

DO NOT REWIND FILMS

A-V FORM IC-3

RETURN IMMEDIATELY AFTER SHOWING 42646

PACKING SLIP

A-V FORM IC-3

DO NOT PAY
THIS IS NOT AN INVOICE

2 CONFIRMATION COPY

A-V FORM IC-3

PACKED BY

3 CONTROL COPY 24

SAMPLE MULTIPLE FORMS FOR PICKUP, PREVIEW, OFF-CAMPUS DELIVERY

corridor J between rooms 66 or 61 and room 65. Part of the difficulty could be eliminated by constructing the new door between rooms 35 and 63. This would reduce traveling distances by approximately 40 feet between the present pickup/preview and scheduling areas, and eliminate use of the locked door on corridor J.

Traffic

In analyzing the movement of carts and equipment within rooms 35 and 65, it was found that aisles and doors should be approximately 36 inches wide; however, maneuverability would be improved by wider (i.e., double door) exits. It was reported by several staff members that a double door entrance is a necessity for the pickup/preview counter during the busy periods of the school year, a period not observable in the time frame of this study.

Space and Utilization

An inventory of the present storage and work facilities in each of the integral units is included in Appendix D. In surveying the current utilization of storage areas for equipment and media, it was found that most shelves are filled and that the current rate of acquisition is causing overcrowding and disorganization. The current, unsystematic pattern of shelving pieces of equipment makes it difficult for the staff to remember the location of specific pieces of equipment.

Rearranging equipment in numerical sequence, a suggestion made by the Head of Distribution Services, would help the staff to locate individual pieces faster, according to the observations made in this study. While rearranging the equipment on paper, it was difficult to hold to the goal of numerical sequence because of the current use of odd-size shelving.

Although the smaller sections are economical, it was observed that moveable wooden shelf dividers in the standard size units are being used for smaller pieces of equipment with the same result. Equipment can be shelved in separate pools, in nearly numerical sequence using the current units. The Table showing the proposed reorganization of equipment is included in Appendix C.

Related Factors

1. Expansion. Both the media and equipment collections will be increased over the next five years, according to the librarians in charge of acquisitions. Additional shelving and floor space will be required. Estimates of the amount of expansion and the additional storage requirements are found in Table B-2 of Appendix B. Shelving new acquisitions in the equipment and media storage areas will require rearrangement of the current plan because equipment or media of one type should logically be shelved together to simplify retrieval. The reorganization of media shelving based on expected expansion is described in Table C-2 in Appendix C. Units for expansion also were taken into account during the numerical reorganization of equipment, as described above.

2. Aisles. The aisle width of 36 inches between shelving units was found to be appropriate for traffic and lifting heavy or bulky pieces where room for leverage is required. This is not the case in media storage, and, consequently, aisles of approximately 30 inches are feasible in that area. Other types of storage units, such as the file cabinets and projector screen rack, require an aisle almost equal to their depth.

3. Security. Security of equipment and media is a current problem because doors leading into rooms 35 and 65 from the public corridor, reproduction services (room 31), and the projection booth (room 37) are not

always kept locked due to frequent use by the staff. Although space reorganization alone cannot solve the problem, it is possible to arrange the floor plans so that traffic is not routed through these doors.

PROPOSED SPACE LAYOUTS

The following three space layouts are presented as the final recommendations of this study. The major differences in the plans are the locations of the shipping area, the equipment inspection area, the archive film storage area, and the master audio tape storage area. Plan 1 and 2 are similar in all respects except that the locations of the shipping and equipment inspection areas are interchanged. In Plan 1, shipping is located directly behind the pickup/preview counter in room 65, where equipment inspection is currently located. The equipment inspection area is moved to the opposite side of that room. In Plan 2, equipment inspection is not moved and shipping is relocated to room 65 diagonally across the room from the pickup/preview counter. As discussed in the findings above, both media storage and equipment storage are rearranged to permit expansion but remain in the same location in Plans 1 and 2. Projection equipment (EP/EA) is moved from storage with loan equipment (EL/ET) in room 65 to room 31. Projection carts and oversize video monitors on carts are also moved from room 65 to room 31.

Plan 3 is a stop-gap measure for use if one of the other proposals is not carried out. It entails two relocations, archive films from room 66A and master audio tapes from room 53 into the only available space--room 31.

The advantages and disadvantages of the final proposals will be explained here, beginning with the features that Plans 1 and 2 have in common. Following this discussion a summary table of the proposed changes, proposed floor plans, and resulting paper flows are presented.

Plans 1 & 2: Common Advantages

1. The existing double door entrance to room 65 permits an orderly flow of traffic and prevents congestion by allowing more than one person to enter or leave at one time. In addition, it is an easily maneuverable door for carts and trucks.
2. Equipment inspection, shipping, and the pickup/preview counter can be located in one room. Equipment inspection and pickup/preview are close to the loan equipment (EL) storage area. Shipping is within convenient reach of the pickup/preview counter and the media storage area.
3. The changes proposed can be made with a minimal amount of physical alterations of shelving units, etc.
4. The proposed new door between room 35 (media storage) and room 61 (scheduling office) will reduce the distance between the pickup/preview counter from 80 feet to 60 feet thereby facilitating staff communication.

Plans 1 & 2: Common Disadvantages

1. The distance between the pickup/preview counter (room 65) and the scheduling office (room 61) still requires that, in the event of a problem order, an employee a) travel beyond sight and hearing range of the counter to the office, or b) send a customer around the corridor to scheduling.

2. Customers may be frustrated by the distance between the scheduling office and the pickup/preview counter. The distance between the counter and the former location of the scheduling office was approximately 85 feet. It is now approximately 135 feet which is an increase of 50 feet, one way.
3. The public appearance of the pickup/preview counter is not improved. A move to a room with fixed walls and internal doors would have created a more "business-like" image for this area.
4. The location of the master audio tape storage area in room 35 (media storage) necessitates more travel than to room 31 (projection service), as in Plan 3.

Plan 1 vs. Plan 2: Advantages

1. The juxtaposition of the pickup/preview counter and shipping areas allows the shipper and assistant shipper easy access to both areas. It is hoped the proximity of the shipping desk will result in the counter being staffed at all times.

Plan 2 vs. Plan 1: Advantages

1. The unchanged location of the equipment inspection area allows convenient access to both the EL/ET storage area and the EP/EA area in room 31. The distance to room 31 is slightly longer in Plan 1.

Plan 3: Advantages

1. There is little physical reorganization and moving of equipment, material, etc.
2. Master audio tapes are nearer the public corridor (F) providing a more convenient arrangement for the staff requiring daily access to them than if they are stored in room 61 (media storage) as in Plans 1 and 2.

Plan 3: Disadvantages

1. There is no direct view of the pickup/preview counter from the shipping desk.
2. The space in room 31 is not fully utilized.
3. The equipment storage space is over-crowded when space for expansion in both EL/ET and EP/EA groups is allocated.
4. Expansion of storage space in the media storage area is not possible without over-crowding.

TABLE 2

Summary of Proposed Changes

PLAN 1	No Change	Expand Area	Same Location	Different Location
1. EL/ET equipment storage		X	X	
2. EP/EA equipment storage (inc. carts) and projection service work desk		X		X
3. Equipment inspection and repair				X
4. Master tape storage				X
5. Media inspection	X			X
6. Media storage		X	X	
7. New door between rooms 61 and 35, or 63 and 35 or 63 and 65				
8. Oversize video equipment on carts				X
9. Pickup/preview counter			X	
10. Shipping area				X

PLAN 2	No Change	Expand Area	Same Location	Different Location
1. EL/ET equipment storage		X	X	
2. EP/EA equipment storage (inc. carts) and projection service work desk		X		X
3. Equipment inspection and repair	X			
4. Master tape storage				X
5. Media inspection	X			
6. Media storage		X	X	
7. New door between rooms 61 and 35, or 63 and 35 or 63 and 65				
8. Oversize video equipment on carts				X
9. Pickup/preview counter			X	
10. Shipping area				X

PLAN 3	No Change	Expand Area	Same Location	Different Location
1. EL/ET equipment storage			X	
2. EP/EA equipment storage (inc. carts) and projection service work desk			X	
3. Equipment inspection and repair	X			
4. Master tape storage				X
5. Media inspection	X			
6. Media storage	X			
7. New door between rooms 61 and 35, or 63 and 35 or 63 and 65				
8. Oversize video equipment on carts				X
9. Pickup/preview counter	X			
10. Shipping area	X			

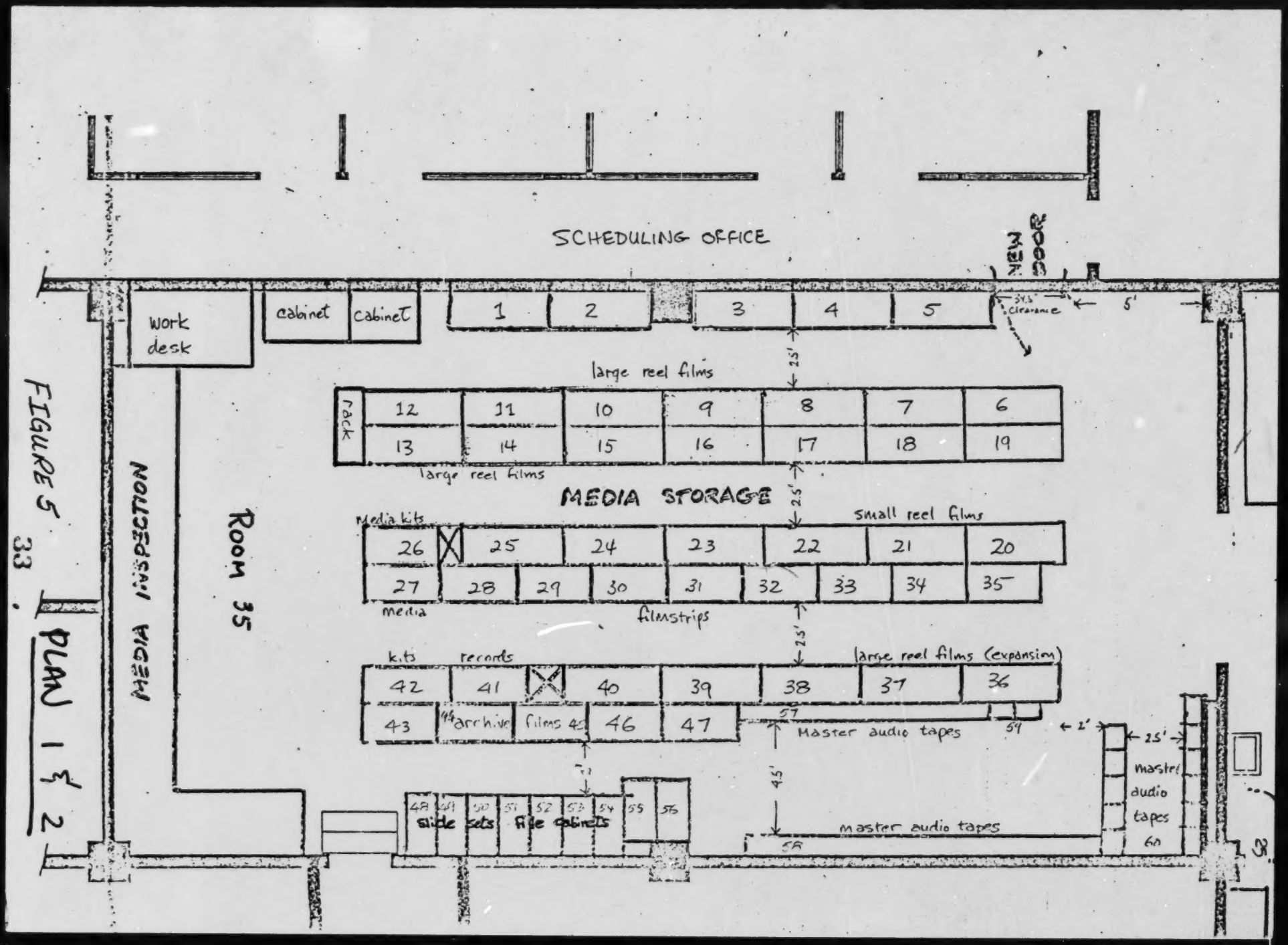


FIGURE 5 PLAN 1 & 2

FIGURE 6

PLAN 1

FIGURE 7

PLAN 2

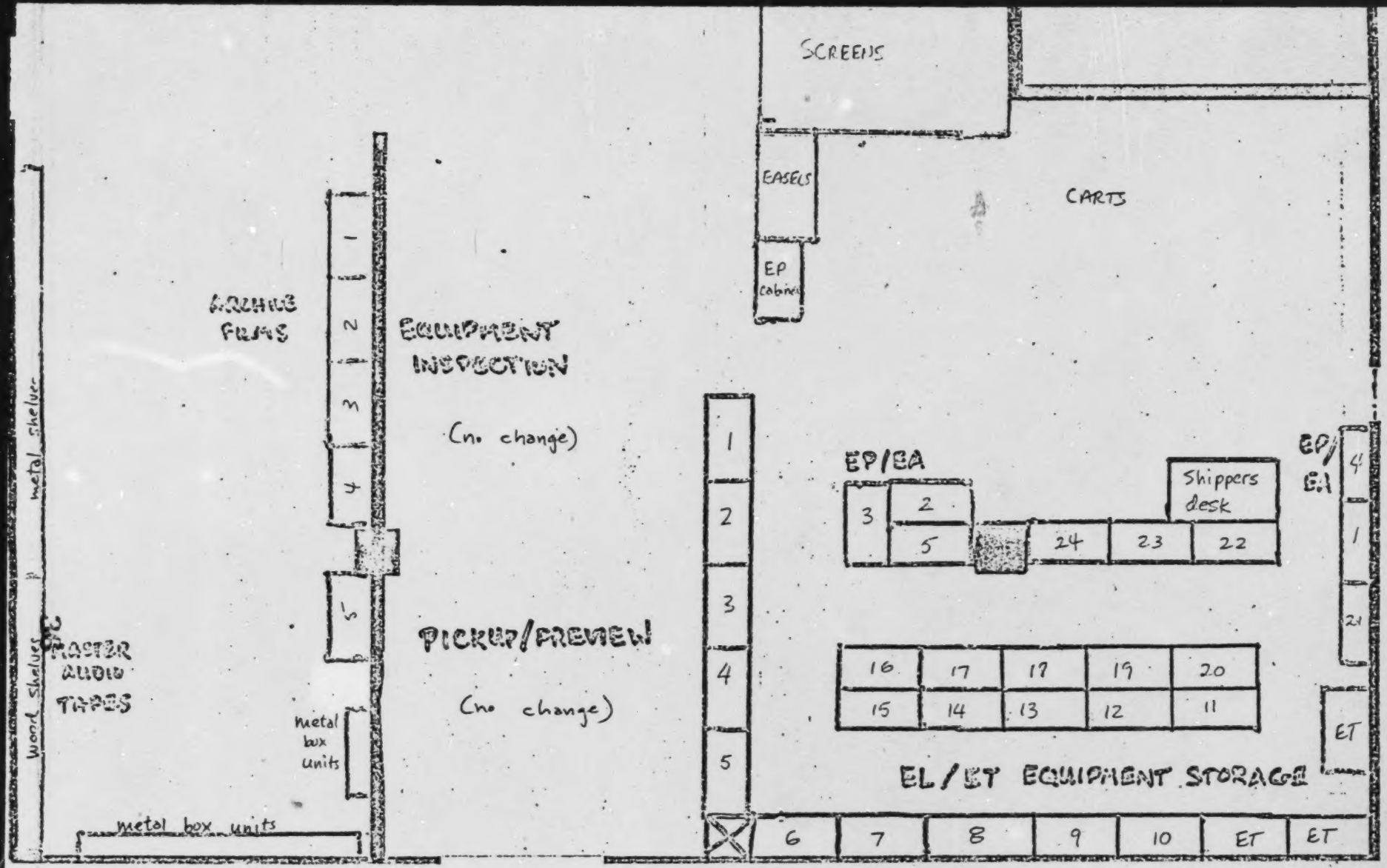


FIGURE 9
PLAN 3

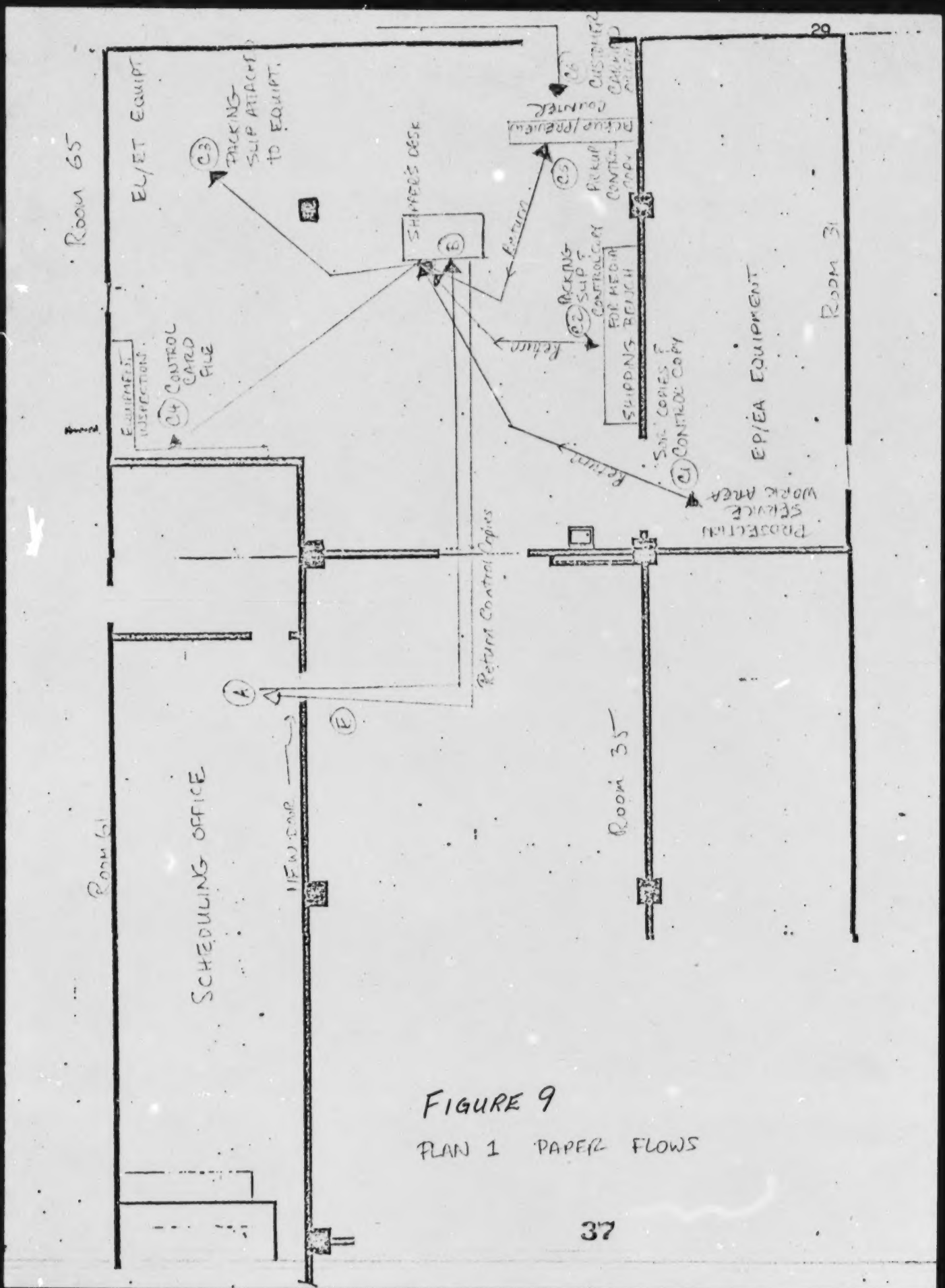


FIGURE 9

PLAN 1 PAPER FLOWS

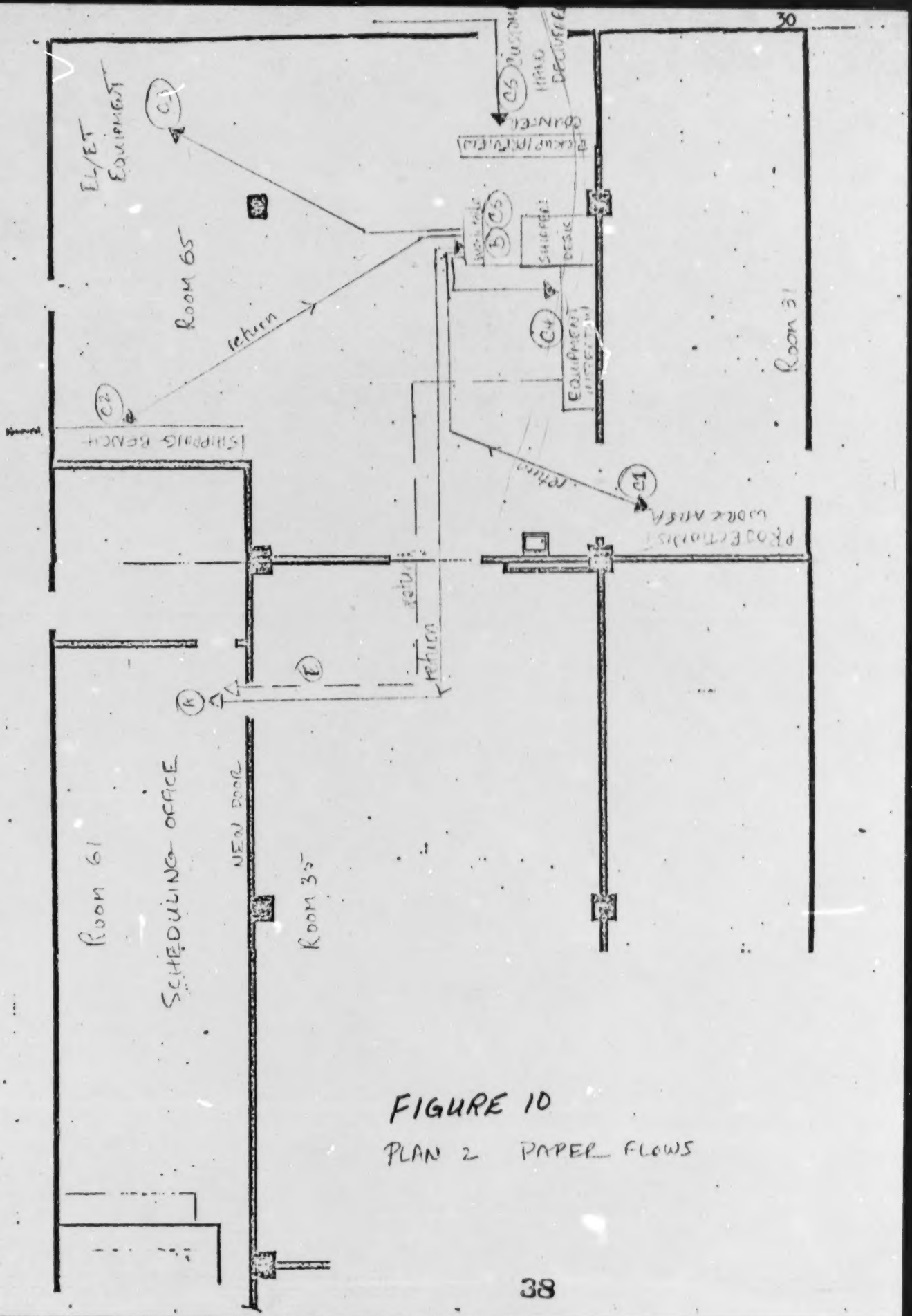


FIGURE 10

PLAN 2 PAPER FLOWS

APPENDIX A

CURRENT FLOOR PLANS

STEWART CENTER

FLOOR PLANS

GROUND FLOOR

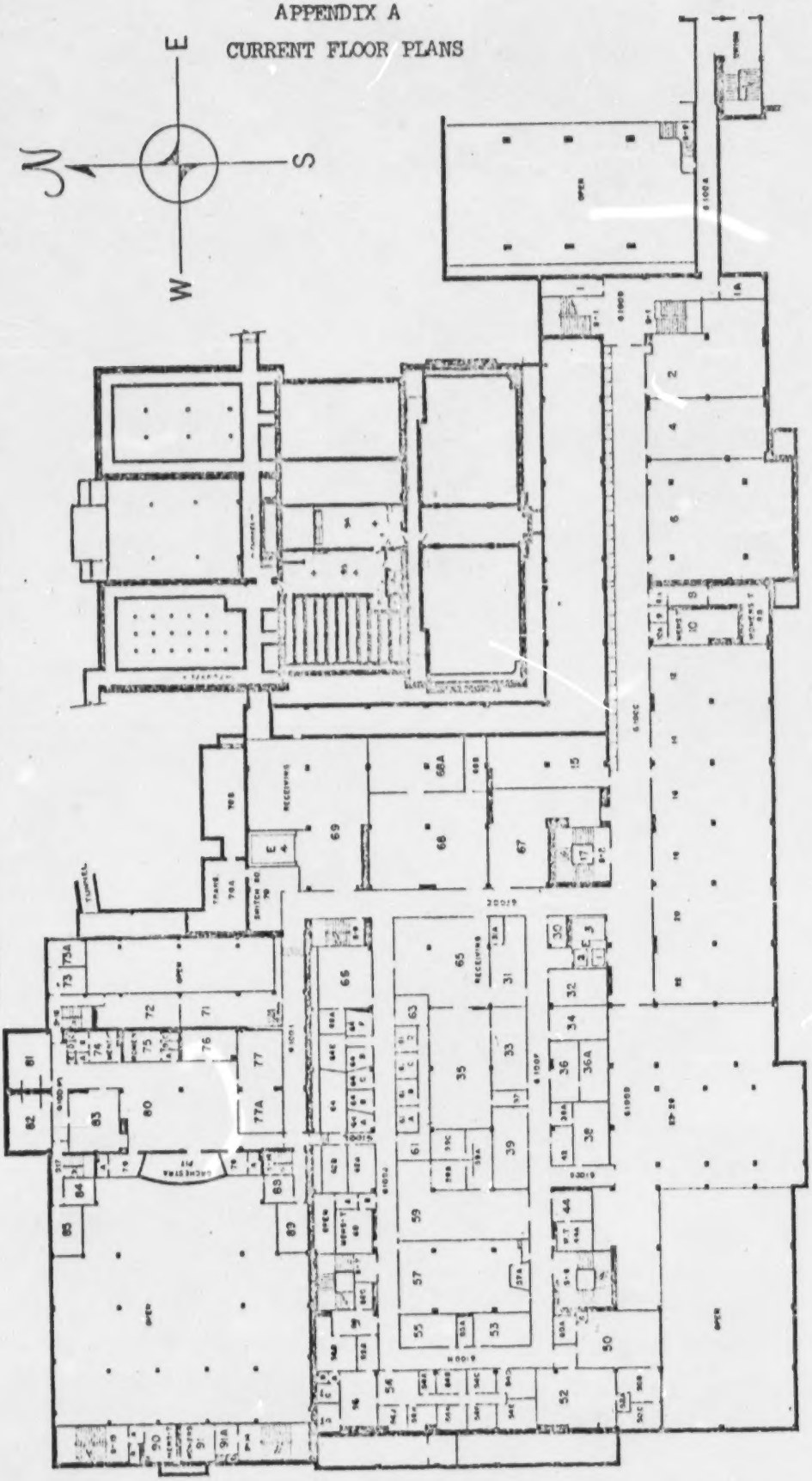


FIGURE A-1

PRESENT LAYOUT OF EQUIPMENT STORAGE (Room 65).

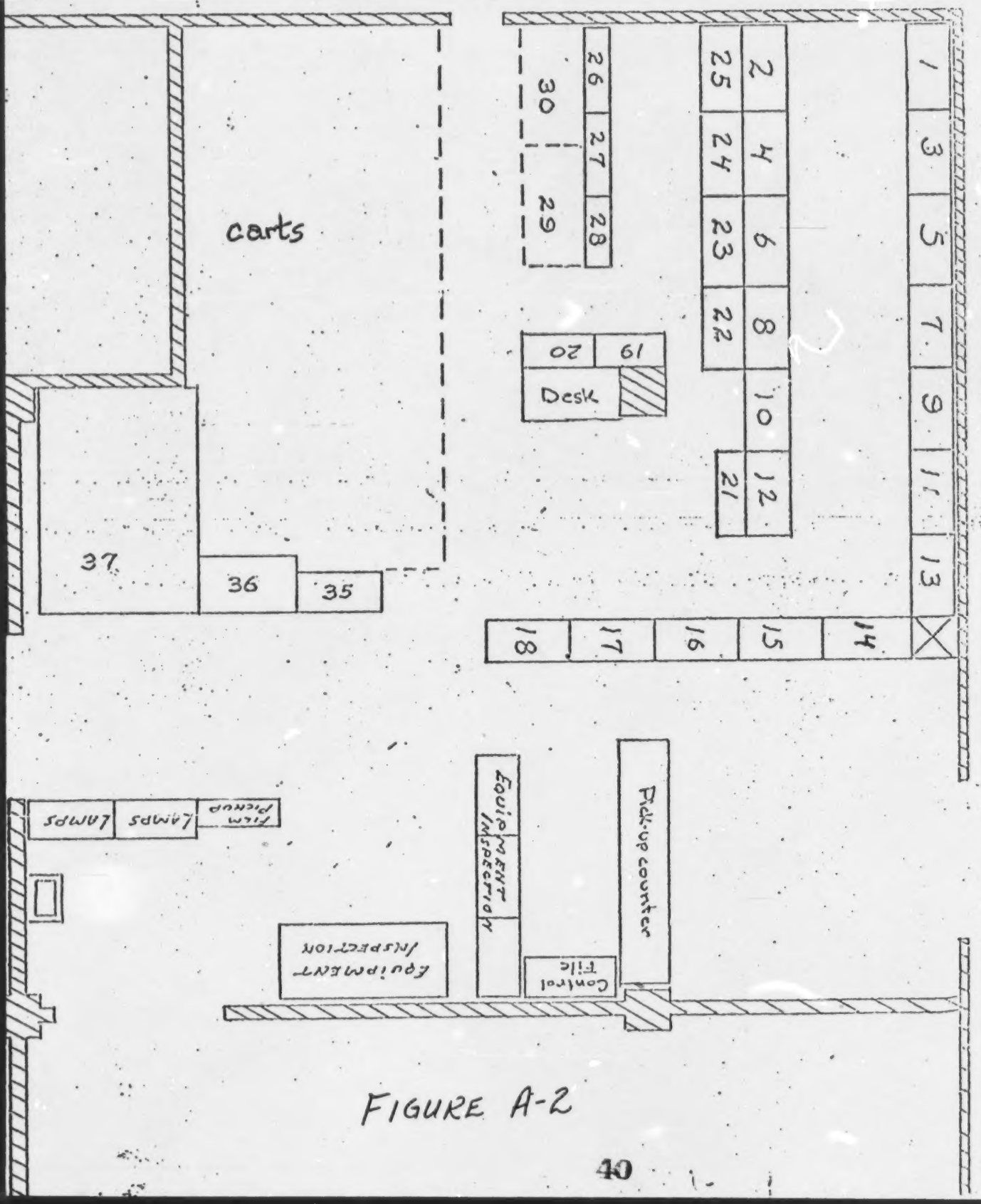


FIGURE A-2

PRESENT LAYOUT OF MEDIA STORAGE (Room 35)

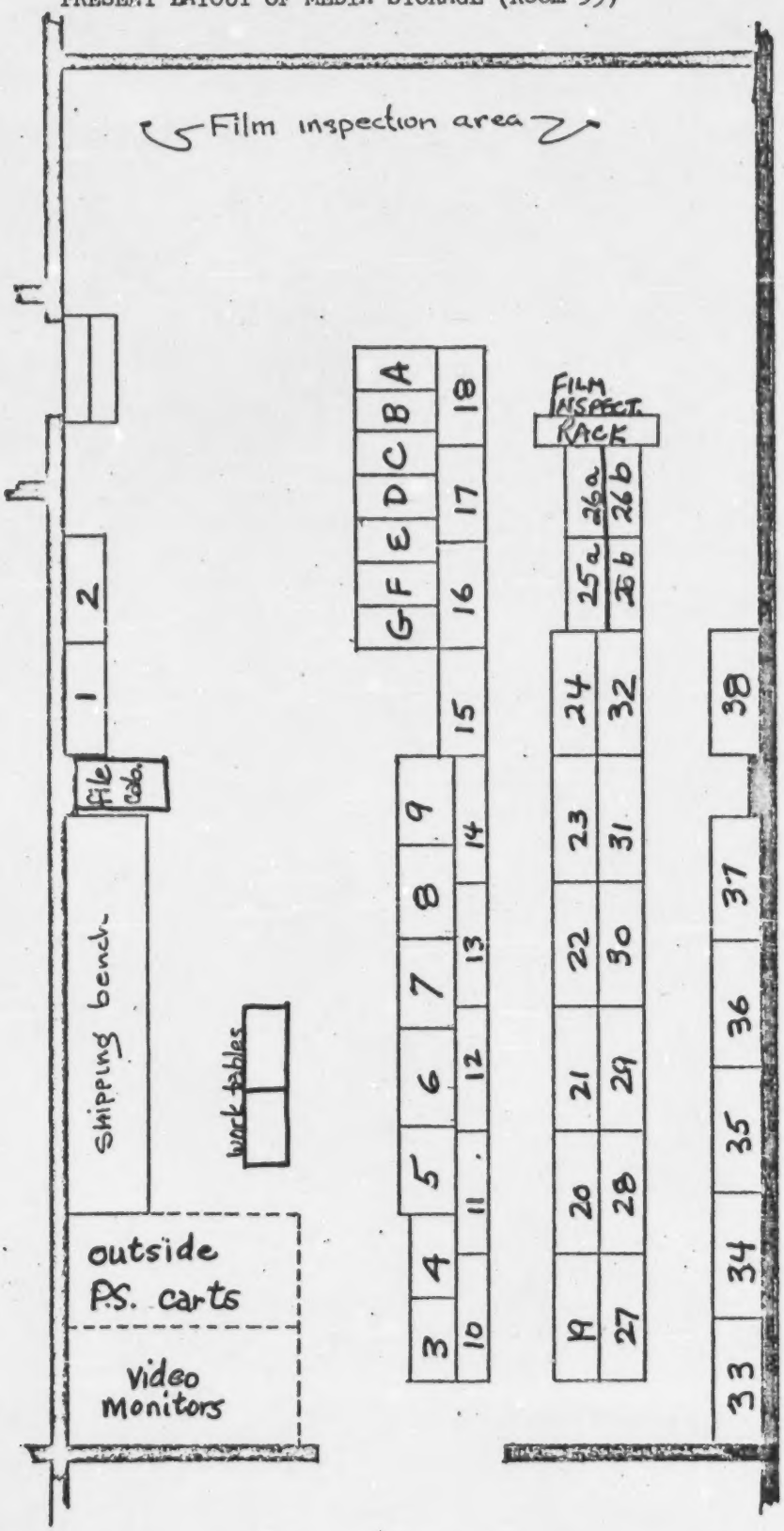


FIGURE A-3

APPENDIX B

PRESENT AND PLANNED SPACE REQUIREMENTS

Table B-1.1

FIVE-YEAR PROJECTED EXPANSION REQUIREMENTS

FOR INTEGRAL UNITS

		PRESENT	PLANNED
1.	EL Equipment	22 reg. shelf units	20 reg. shelf units
		6 odd shelf units	4 odd shelf units
		1 large shelf unit	same
		1 screen storage	same
			4 preview projection carts
	ET Equipment	with EL equipment	3 reg. shelf units
2.	EP/EA Equipment & Projection Service	with EL equipment	4 reg. shelf units
			2 odd shelf units
		3 cabinets	same
3.	Equipment Inspection & repair	1 work bench	same
		3 reg. shelf units	same
		3 cabinets	same
4.	Master Tape Storage	5 metal shelf units	same
		2 wood box units	same
		8 metal box units	52 metal box units
5.	Media Inspection	1 reg. shelf unit	same
		1 cabinet	same
		1 wood desk	same
		1 cart w/typewriter	same
		2 tables	same
		2 inspection machines	same
		1 rewind machine	same
		1 film inspec. rack	same
		4 film rack carts	same

Table B-1.2

FIVE-YEAR PROJECTION EXPANSION REQUIREMENTS

FOR INTEGRAL UNITS

6.	Media Storage (inc. Archive films)	7 file cabinets	9 file cabinets
		5-4' sm. reel shelves	6 small reel shelves
		18-4' lg. reel shelves	23 lg. reel shelves
		5-3' reel shelves	same
		1 record box unit	same
		7 reg. shelf units	9 reg. shelf units
7.	New door		standard size
8.	Oversize Video Equipment	4 monitors on carts	same
9.	Pickup/Preview Counter	1-8' counter	same
		1 short counter	same
		1 work desk	same
		1 suspended ledge	same
		1 catalog table	same
10.	Shipping Area	1 work bench w/scale	same
		1 file cabinet	same
		3 short counters	same
		1 flat cart	same
		2 flat carts w/carrier	same
		3 hand carts	same
		2 film rack carts	same

Table B-2

FIVE-YEAR PROJECTED EXPANSION REQUIREMENTS

FOR EQUIPMENT AND MEDIA STORAGE

EL Equipment	Current Number	Current Space	Amount of Expansion	Planned Space
16mm projectors	24	12 shelves (2.5 units)	25%	15 shelves (3 units)
Carousel projectors	34	12 shelves (2.5 units)	50%	18 shelves (3.6 units)
Cassette players	6	2 shelves (.25 units)	200%	4 shelves (.50 units)
Opaque projectors	4	2 shelves (.25 units)	100%	4 shelves (.50 units)
Overhead projectors	22	11 shelves (3.7 units)	35%	15 shelves (5 units)
EP/EA Equipment				
All except carts and amplifiers		5 units	25%	6 units
Media				
Films		23 units	750	29 units
Film loops			25	same
Film strips		6 units	125	8 units
Slide sets		7 cabinets	150	9 cabinets
Media kits		1 unit	150	3 units

Table B-3

PROPOSED STORAGE UNITS FOR FUTURE ACQUISITION

Equipment

4 standard units (3 EL/ET; 1 EP/EA)

Media

6 film rack units (5 large reel; 1 small reel)

5 standard units (film strip; media kits)

2 file cabinets (slide sets)

APPENDIX C

GUIDES FOR REORGANIZATION OF EQUIPMENT AND MEDIA

Table C-1.1

PROPOSED EQUIPMENT STORAGE REORGANIZATION

EL Equipment

Unit*	Shelf	AVC Numbers	Equipment	Height	Total
1	ltop	-	-		
	2	004,007,008,011	Lights	8.5	
		0113,0114,0115	Mic stands		
	3	201,202,203	Extension cord	5	
		204,205,206	Extension cord	5	
		207,250,251	Extension cord	5	
		252,253,254	Extension cord	5	
		255,256,257	Extension cord	5	
		258,259,260	Extension cord	5	
		101-109	Floor stands	36	74.5
2	ltop	-	-		
	2	609,610,611	Speakers	16	
	3	603,604,605	Speakers	28.5	
	4	606	Speaker	12	
	5	612,613,614	Speakers	16	
	6	680	Speaker	11	83.5
3	ltop	-	-		
	2	615,616,706	Speakers; Mic	16	
	3	707,720,721,722,723, 724,730,731,732,733, 734	Mic	10	
	4	901,902,903	Portapages	13.5	
	5	904,905,906	Portapages	13.5	
	6	907,908,909	Portapages	13.5	
	7	681	Portapage	11	76.5
4	ltop	-	-		
	2	1030,1031,1032,1033, 1034,1035	Portable PA	13.5	
	3	1011,1012,1013	Portable PA	19	
	4	1014,1015,1016	Portable PA	19	
	5	1017,1025,1080,1081, 1095,1096	Portable PA	19	
	6	910,911	Portapages	13.5	84

*Unless noted, units are standard 36" wide, 18" deep and 84" or 87" high Lyons shelf units. Odd-size units are as follows: (1) 36" wide, 10" deep (former units 26,27); (2) 30" wide, 10" deep (former unit 28); (3) 36" wide, 9" deep (former unit 19); (4) 31" wide, 9" deep (former unit 20); (5) 36" wide, 12" deep (former unit 21).

Table C-1.2

PROPOSED EQUIPMENT STORAGE REORGANIZATION

5	ltop	-	-		
	2	1117,1118,1119,1120	Tape Recorders	13.5	
	3	1121,1122,1123,1124	Tape recorders	13.5	
	4	1125,1126,1127,1128	Tape recorders	13.5	
	5	1129,1170,1171	Tape recorders	13.5	
	6	1190,1192,1193,1194, 1195, 1173	Foot pedals	13.5	
	7	-	-		67.5
6	ltop	-	-		
	2	1711,1712,1713	8mm Reg.	8	
	3	1501,1502	Overheads	27	
	4	1503,1560	Overheads	27	
	5	1516,1517	Overheads	22	84
7	ltop	-	-		
	2	1730,1731	8mm Super	14	
	3	1518,1519	Overheads	22	
	4	1520,1521	Overheads	22	
	5	1543,1544	Overheads	26	84
8	ltop	-	-		
	2	1751,1753,1755	8mm	13.5	
	3	1790,1795	8mm	15.5	
	4	1545,1546	Overhead	27.5	
	5	1547,1548	Overhead	27.5	84
9	ltop	-	-		
	2	1549,1551	Overhead	27.5	
	3	1554,1556	Overhead	27.5	
	4	1558,1559	Overhead	27.5	82.5
10		for future purchase	Overhead		
11		for future purchase	Opaque; 16mm		
12	ltop	1801,1802	16mm projector		
	2	1803,1804	16mm projector	21	
	3	1805,1806	16mm projector	21	
	4	1602,1603	Opaque	21	
	5	1604,1605	Opaque	21	84
13	ltop	1807,1808	16mm projector		
	2	1809,1810	16mm projector	21	
	3	1830,1831	16mm projector	21	
	4	1832,1833	16mm projector	21	
	5	1834,1835	16mm projector	21	84
14	ltop	1836,1837	16mm projector		
	2	1838,1839	16mm projector	21	
	3	1840,1841	16mm projector	21	
	4	1842,1843	16mm projector	19	
	5	expansion 2185,2105 temp.		23	84

Table C-1.3

PROPOSED EQUIPMENT STORAGE REORGANIZATION

15	ltop	-	-		
	2	2001,2002,2003	filmstrip projector	12	
	3	2006,2007,2008	filmstrip projector	12	
	4	1901	slide projector	15	
	5	1902	slide projector	15	
	6	1903	slide projector	15	
	7	1904	slide projector	15	84
16	ltop				
	2	2013,2050,2051	projector	12	
	3	20	projector	16	
	4	2130,2132,2134	carousel	18	
	5	2102	slide projector	23	
	6	1905	slide projector	15	
		1985,1990,1995	adapters		84
17	for future purchase				
18	ltop	2136,2137,2138	carousels		
	2	2139,2140,2141	carousels	21	
	3	2142,2143,2144	carousels	21	
	4	2145,2146,2147	carousels	21	
	5	2148,2149,2150	carousels	21	84
19	ltop	2169,2171,2172	carousels		
	2	2173,2174,2175	carousels	21	
	3	2176,2177,2178	carousels	21	
	4	2179,2180,2181	carousels	21	
	5	2182,2183,2184	carousels	21	84
20	ltop	2301,2302,2303,2304	slide projectors	16	
	2	2305,2306,2307,2308	slide projectors	16	
	3	2309,2310,2311	slide projectors	16	
	4	2402,2403,2404,2405	record players	18	
	5	2406,2407	record players	18	44
21(1)	ltop	2501-2506	Extension cord	5	
	2	2507-2510	extension cord	5	
	3	2511-2521	carousel trays	12	
	4	2522-2538	carousel trays	12	
	5	2540-2550	lens boxes	5	
	6	2551-2570	lens boxes	5	44
22(5)	ltop	3701	projector tables	4	
	2	3702	projector tables	4	
	3	3703	projector tables	4	
	4	3704	projector tables	4	
	5	3601-3604	trans. machine	14	
	6	2901-2999,3002-3025	adapters	18	
	7	3630-3634	cassette recorder	15	
	8	3635,3640	cassette recorder	15	78

Table C-1.4

PROPOSED EQUIPMENT STORAGE REORGANIZATION

23(3)	ltop	3201,3202,3203	cassette recorder		
	2	3204,3205,3206	cassette recorder	4	
	3	3207-3209	cassette recorder	4	
	4	3210-3212	cassette recorder	4	
	5	3213-3215	cassette recorder	4	
	6	3216-3218	cassette recorder	4	
	7	3219-3221	cassette recorder	4	
	8	3222-3224	cassette recorder	4	
	9	3225-3227	cassette recorder	4	
	10	3228-3230	cassette recorder	4	
	11	3231-3233	cassette recorder	4	
	12	3234,3235	cassette recorder	4	44
24 (4)	ltop				
	2	3301-3308	headphones		
	3	3309-3314	headphones	8	
	4	3501,3502	rear screen	14	
	5	3503,3504	rear screen	14	36

EP Equipment

1(2)	ltop				
	2	4005	pointer	6	
	3	4006	pointer	13	
		4101	tape recorder		
	4	4007	pointer	13	
		4102	tape recorder		
	5	4270,4271	transformer box	13	
		4280,4281	cord kit		
		4290,4291	mixer		
	6	4600-4604	table stand for mic	6	
	7	4605-4610	table stand for mic	6	
	8	4710,4730,4740	lens	6	63
2	ltop	4050-4052	elevation box		
	2	4807,4808	16mm	18	
		5101	carousels		
	3	4809,4812	16mm	18	
		5102	carousels		
	4	4813,4820	16mm	18	54
		5103	carousels		
3	ltop	4053,4054,4055	elevation box		
	2	4821	16mm	18	
		5104	carousels		
	3	5105,5106,5107	carousels	18	
	4	5108,5109,5110	carousels	18	
	5	4504,4505	Overhead	27	81

Table C-1.5

PROPOSED EQUIPMENT STORAGE REORGANIZATION

4(1)	1	5201,5102,5210,5211, 5212,5213,5214	tray		
	2	5250,5251,5252,5260	extension cord	6	
	3	5290,5291,5292,5293	lens kits	11	
	4	expansion		11	
	5	5891	cassettee recorder	13	
	6	EA8780-8792	video tapes	12	
	7	expansion			
	8	EA9502-9505,9550-9553	video tapes	13	66
5	ltop	4056,4057	elevation boxes		
	2	4506	overhead	27	
		5401	record player		
	3	EA8703,8720,8741	video screens	26	
	4	EA8742,8750,8751	video screens	26	79
6		for future purchase	misc.		

ET Equipment

Some EL equipment being reclassified to ET

1	ltop	-	-		
	2	18.3,18.7	16mm	21	
	3	11.31,11.32,11.33,11.34		15	
	4	11.35,11.36,11.37,11.38		15	
	5	21.1,21.2,21.3,21.4	carousel	13	
	6	8801,8802		20	84
2	1	1101,1103,1110,1112	tape recorders		
	2	1150,1151,1152,1153		15	
	3	1154,1155,1156,1157		15	
	4	1158,1159,1160,1161		15	
	5	1162,1163,1164,1165		15	
	6	1166		15	75
3	ltop	1113,1114	tape recorders		
	2	1820,1821	16mm	19	
	3	1823,1824	16mm	19	
	4	1826,1827	16mm	19	
	5	1828,1829	16mm	19	76

Table C-2

PROPOSED MEDIA STORAGE REORGANIZATION

Type of Media	Present Units Numbers	Number of old Units	Number of new Units	Planned Unit Numbers*
Large reel films	19-24	18	1	1-19
Large reel films	27-38		4	36-39
Small reel films	10-14	5	1	20-25
Media kits	18	1	2	26-27
Media kits				42
Filmstrips	16-17	6	2	28-35
Filmstrips	25-26(4)			
Records	15	1		41
Not used				40
Archive films				43-47
Slide sets	A-G	7	2	48-56
Master audio tapes	Rm 53 wood shelves			57
Master audio tapes	Rm 53 metal shelves			58
Master audio tapes	Rm 53 metal boxes			59
Master audio tapes	Rm 68 metal boxes			60

*These unit numbers pertain to the floor plans for Plans 1 and 2. There is a great variety in shelving units but for each type of media the expansion units are to be the same style and size.

APPENDIX D

REJECTED PLANS

There are four alternatives to locating the pickup/preview counter at the existing double-door entrance of room 65, based on other doors leading to the public corridors. They are:

At the corridor entrance to room 31	(Plan 4)
At the corridor entrance to room 65	(Plan 5)
In (or facing into) room 63	(Plans 6 & 7)
Along the wall between room 35 and room 61, near the service desk of the scheduling operation	(Plan 8)

These four locations were the basis of the five plans which were subsequently rejected.

Substantial objections to each plan were raised following the presentation to the AVC Advisory Group. These objections primarily concerned the difficulties of queuing customers (Plans 6, 7, and 8); separating the pickup/preview counter and scheduling office by a great distance for customers (Plan 4); and the requirement for a double-sized customer door, in addition to construction of a new internal door (Plan 5). Nevertheless, there are definite advantages to consolidating the customer service areas of scheduling and pickup/preview or even moving them closer to each other than the present proposals allow. Given the constraints of the building's construction and the space requirements of various activities, it is not likely that the pickup/preview counter could be located in room 63 (Plans 6 and 7) or in the wall between room 61 and 35 (Plan 8). The possibility

of using the other corridor door in room 65 (Plan 5) is recommended for consideration in the future.

A simple sketch of each plan and a brief outline of the advantages and disadvantages of each follows.

Table D-1

PLAN 4	No Change	Expand Area	Same Location	Different Location
1. EL/ET equipment storage		X	X	
2. EP/EA equipment storage (inc. carts) and projection service work desk		X	X	
3. Equipment inspection and repair	X			
4. Master tape storage		X		X
5. Media inspection	X			
6. Media storage		X	X	
7. New door between rooms 61 and 35, or 63 and 35, or 63 and 65				
8. Oversize video equipment on carts				X
9. Pickup/preview counter				X
10. Shipping area				X

ADVANTAGES

1. Pickup/preview and shipping area are close to each other
2. Equipment inspection near all pools of equipment
3. Permanent walls at counter give a more business-like image

DISADVANTAGES

1. Distance around the public corridors to Scheduling Office.

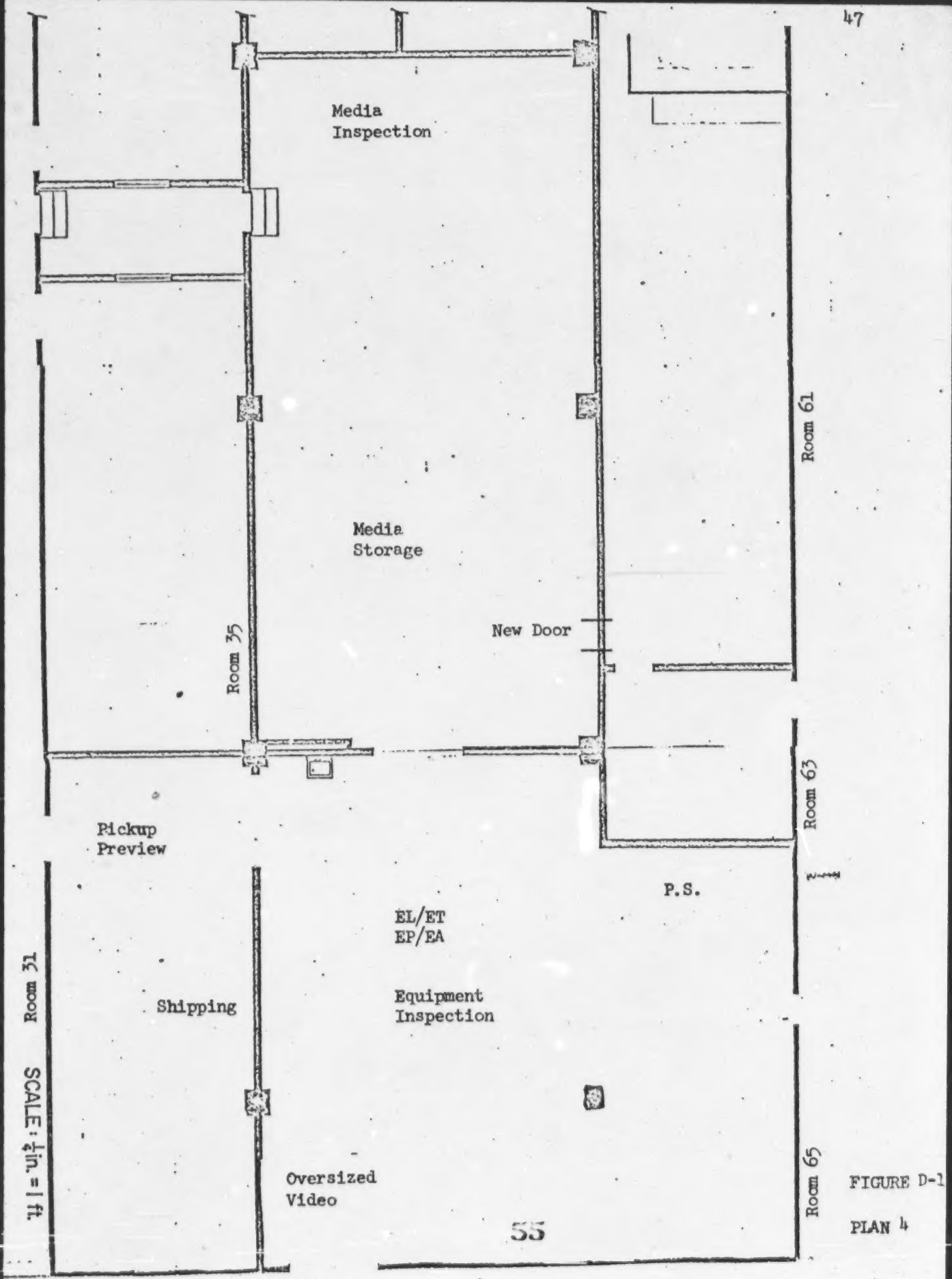


FIGURE D-1

PLAN 4

Table D-2

PLAN 5	No Change	Expand Area	Same Location	Different Location
1. EL/ET equipment storage		X	X	
2. EP/EA equipment storage (inc. carts) and projection service work desk		X		X
3. Equipment inspection and repair	X			
4. Master tape storage		X		X
5. Media inspection	X			
6. Media storage		X	X	
7. New door between rooms 61 and 35, or 63 and 35 or 63 and 65				
8. Oversize video equipment on carts				X
9. Pickup/preview counter				X
10. Shipping area				X

ADVANTAGES

1. Pickup/preview counter on same corridor with scheduling office
2. Pickup/preview counter near shipping area and EL/ET equipment
3. Equipment inspection near all pools of equipment

DISADVANTAGES

1. Inefficient use of room 63
2. Door at the pickup/preview counter not large enough to permit easy flow of traffic

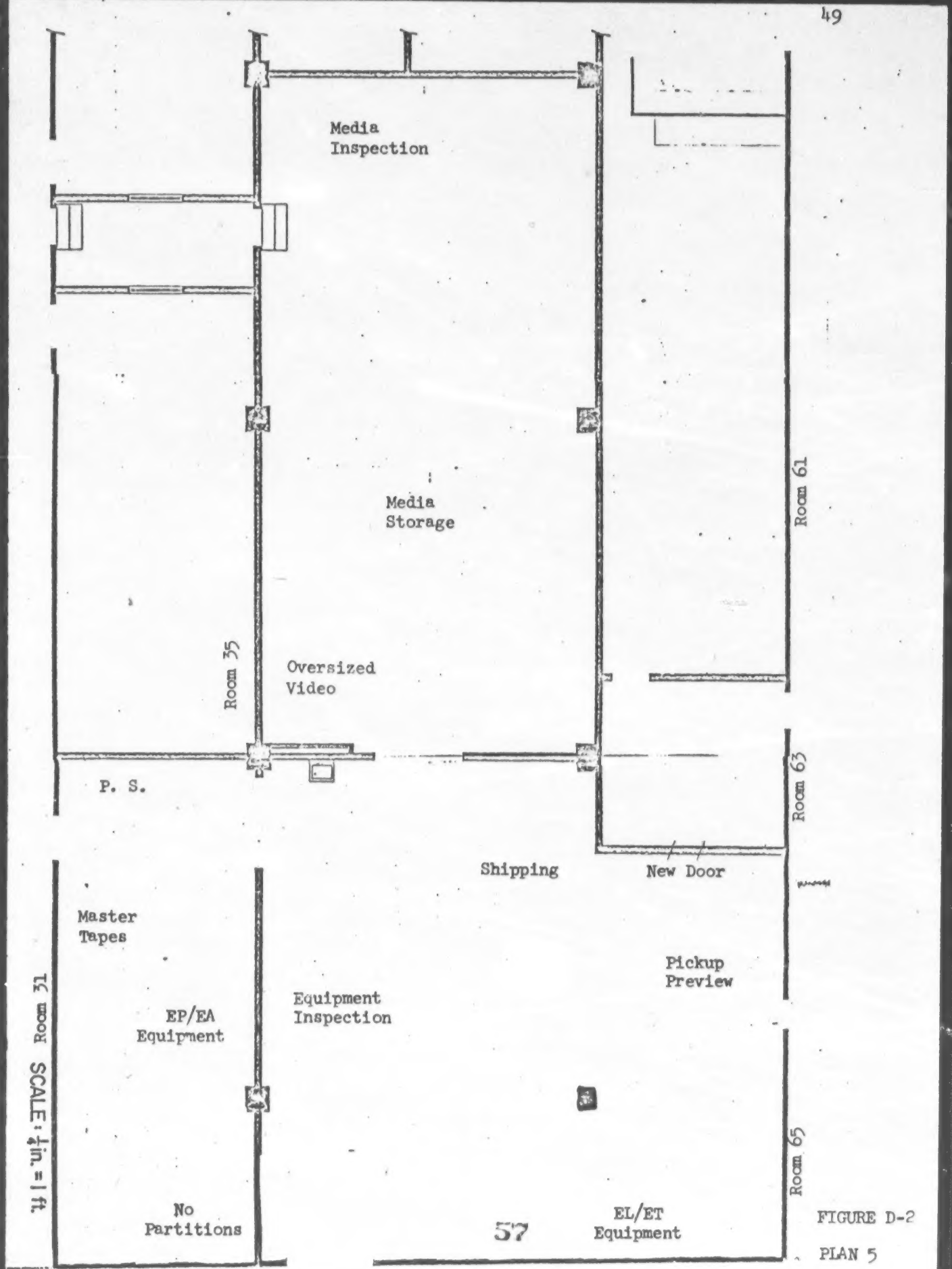


FIGURE D-2

PLAN 5

Table D-3

PLAN 6	No Change	Expand Area	Same Location	Different Location
1. EL/ET equipment storage		X	X	
2. EP/EA equipment storage (inc. carts) and projection service work desk		X		X
3. Equipment inspection and repair	X			
4. Master tape storage		X		X
5. Media inspection	X			
6. Media storage		X	X	
7. New door between rooms 61 and 35, or 63 and 35 or 63 and 65				
8. Oversize video equipment on carts				X
9. Pickup/preview counter				X
10. Shipping area				X

ADVANTAGES

1. Inside door connecting scheduling office and pickup/preview counter already exists
2. Permanent walls in room 63 give pickup/preview counter a more business-like image
3. Customers could use media catalogs in scheduling office

DISADVANTAGES

1. Current corridor entrance to room 63 not large enough to permit easy flow of traffic

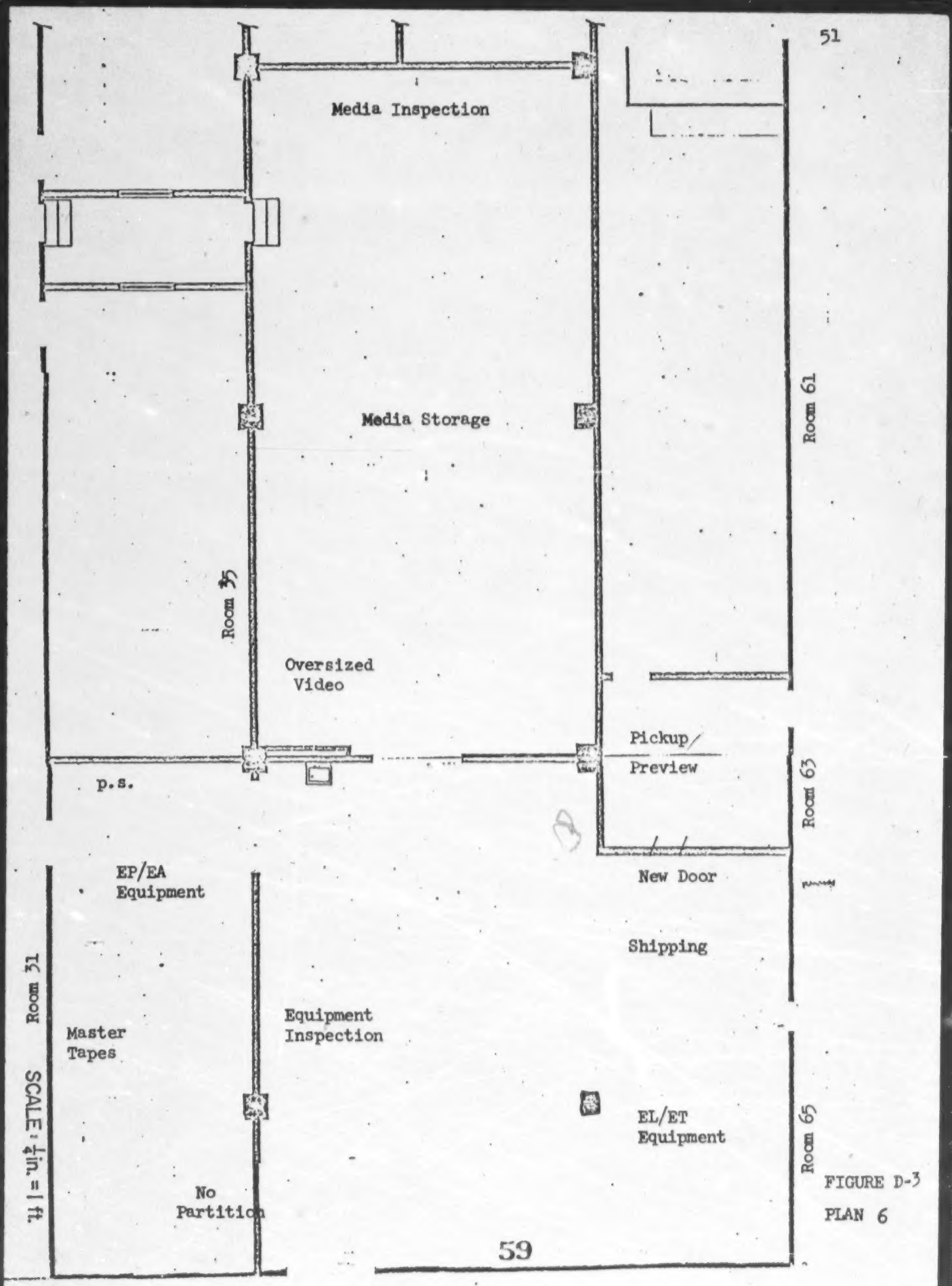


FIGURE D-3

PLAN 6

Table D-4

PLAN 7	No Change	Expand Area	Same Location	Different Location
1. EL/ET equipment storage		X		X
2. EP/EA equipment storage (inc. carts) and projection service work desk		X		X
3. Equipment inspection and repair				X
4. Master tape storage		X		X
5. Media inspection				X
6. Media storage		X		X
7. New door between rooms 61 and 35, or 63 and 35 or 63 and 65				
8. Oversize video equipment on carts				X
9. Pickup/preview counter				X
10. Shipping area				X

ADVANTAGES

1. Inside door connecting scheduling office and pickup/preview counter already exists
2. Permanent walls in room 63 give pickup/preview counter a more business-like image
3. Customers could use media catalogs in scheduling office

DISADVANTAGES

1. Every unit is moved to a different location
2. Current corridor entrance to room 63 not large enough to permit easy flow of traffic

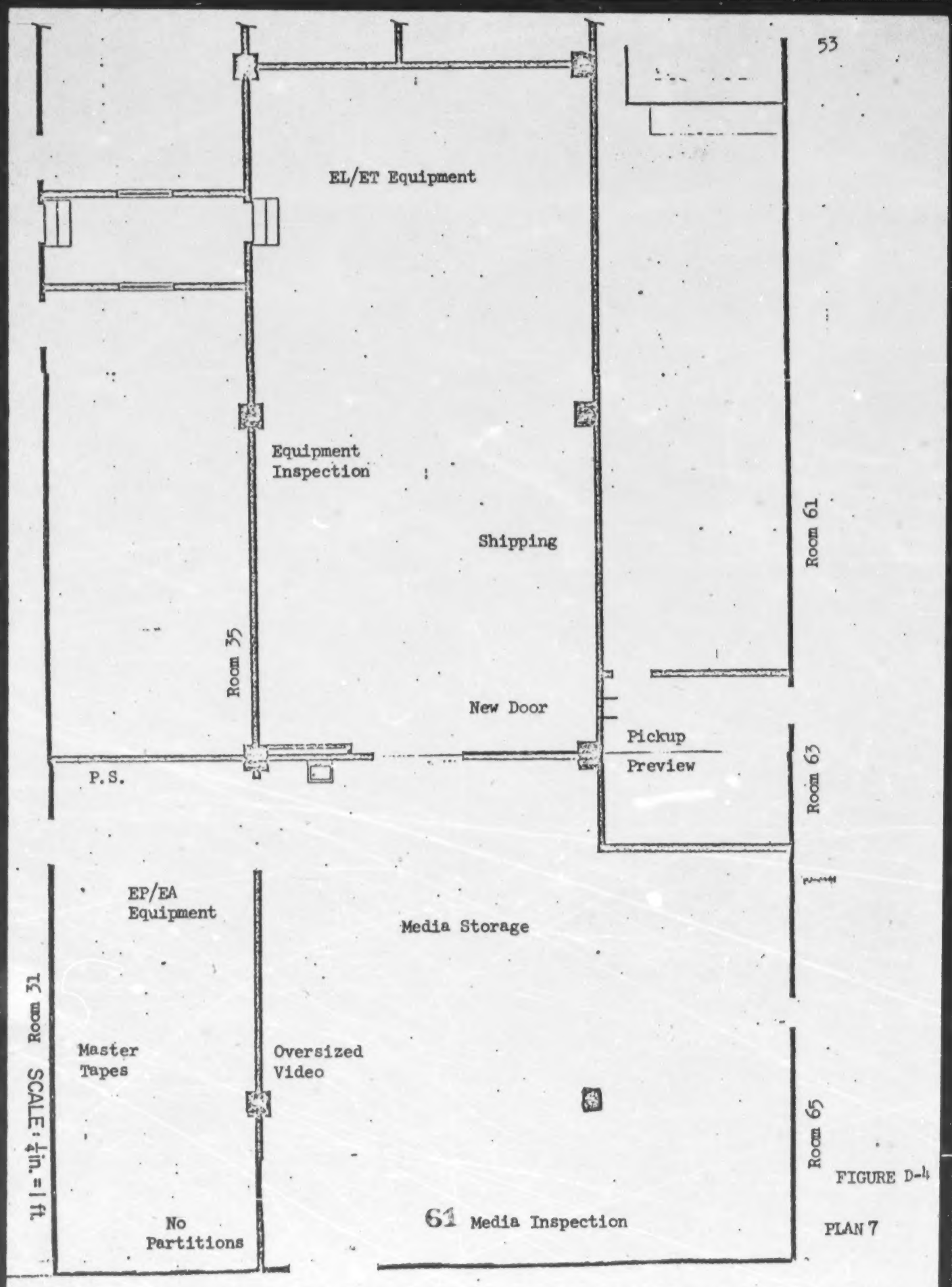


FIGURE D-4

PLAN 7

Table D-5

PLAN 8	No Change	Expand Area	Same Location	Different Location
1. EL/ET equipment storage		X		X
2. EP/EA equipment storage (inc. carts) and projection service work desk		X		X
3. Equipment inspection and repair				X
4. Master tape storage		X		X
5. Media inspection				X
6. Media storage		X		X
7. New door between rooms 61 and 35, or 63 and 35, or 63 and 65				
8. Oversize video equipment on carts				X
9. Pickup/preview counter				X
10. Shipping area				X

ADVANTAGES

1. Consolidation of customer service for scheduling and pickup/preview at one location.
2. Immediate employee access between scheduling and pickup/preview

DISADVANTAGES

1. Every area is moved to a different location
2. Congestion of traffic flow at two desks and out of one regular-sized door

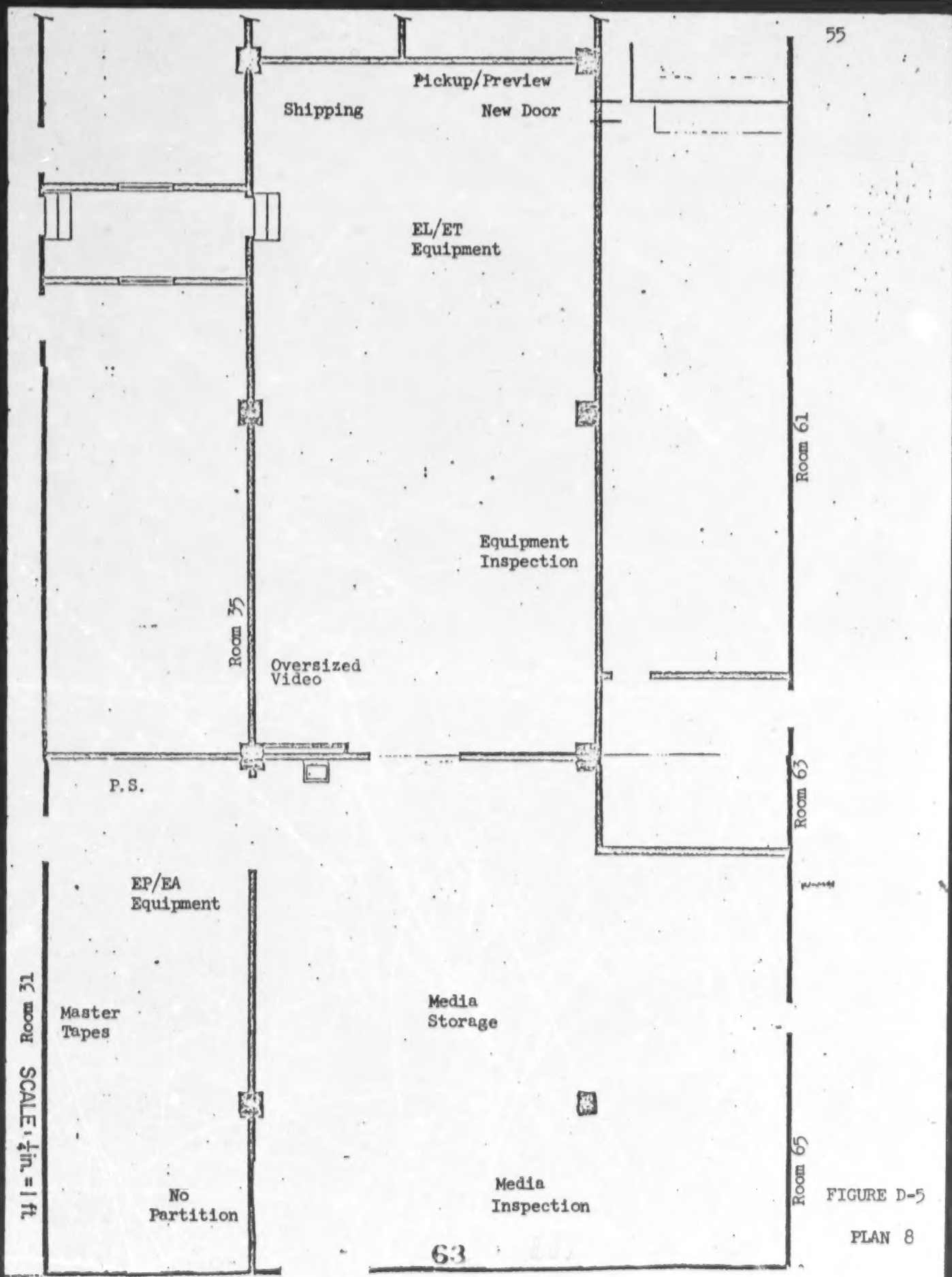


FIGURE D-5

PLAN 8